# Efficient coupling to photonic crystal waveguides using surface plasmon waveguides

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We propose an efficient coupling method from optical fibres to photonic crystal waveguides via surface plasmon waveguides. It has been demonstrated that the field distribution of surface waveguides enables efficient coupling to optical fibres [1]. Furthermore, the high effective index of these waveguides [2] can offer an efficient way of coupling into photonic crystal waveguides. To couple surface plasmon waveguides to photonic crystal waveguides, we designed a structure which consists of a thin gold layer (thickness~10nm) embedded in polymer on top of a photonic crystal waveguide and show simulation results that indicate the viability of this approach.

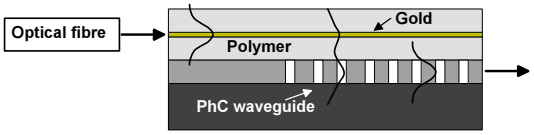


Figure 1 Surface plasmon waveguide on top of a photonic crystal waveguide.

[1] T. Nikolajsen, K. Leosson, I. Salakutdinov, and S. I. Bozhevolnyi, *Applied Physics Letters*, **82**, 668 (2003).
[2] H. Raether, *Surface Plasmon*s (Springer, Berlin, 1998)